

WHAT IS CLAIMED IS:

1. A drill string for a rotary-vibratory drill comprising a plurality of drill pipes, each of the drill pipes having a longitudinal axis and at least one end; a female connector member and a male connector member being between the ends of adjacent said drill pipes, the female connector member having a first portion which mates with a first of the adjacent drill pipes and a second portion extending away from the first of the drill pipes, the male connector member having a first portion which mates with a second of the adjacent drill pipes and a second portion extending away from the second of the drill pipes, the second portion of the female connector threadedly engaging the second portion of the male connector, one of said each drill pipe and the connectors having a plurality of spaced-apart slots adjacent to the end of the drill pipe and communicating outwardly at the end, the slots being parallel to the longitudinal axis, each of the connectors being connected to one of the adjacent drill pipes by welding extending about an adjacent said end of the one drill pipe and along the slots.

2. The drill string as claimed in claim 1, wherein the drill pipes fit over the first portions of the connector members and the slots are in the drill pipes.

20 3. The drill string as claimed in claim 2, wherein each of the slots has a rounded end spaced-apart from said at least one end of said each drill pipe.

4. The drill string as claimed in claim 2, wherein the welding forms a ring extending completely about said adjacent end of the one drill pipe.

25 5. The drill string as claimed in claim 2, wherein the slots are U-shaped.

6. A drill pipe assembly comprising a drill pipe having a longitudinal axis and an end, and a threaded connector member having a first portion within the drill pipe and a

second portion extending away from the drill pipe, at least one of the drill pipe and connector member having a plurality of spaced-apart slots adjacent to the end and communicating outwardly at the end, the slots being parallel to the longitudinal axis, the connector being connected to the drill pipe by welding extending about said end of the drill pipe and along the slots.

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7. The drill pipe assembly as claimed in claim 6, wherein the drill pipe fits over the first portion of the connector member and the slots are in the drill pipe.

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8. The drill pipe assembly as claimed in claim 7, wherein each of the slots has a rounded end spaced-apart from said end of said drill pipe.

9. The drill pipe assembly as claimed in claim 7, wherein the welding forms a ring extending completely about said end of the drill pipe.

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10. The drill pipe assembly as claimed in claim 7, wherein the slots are U-shaped.

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11. A method of connecting a drill pipe for a rotary-vibratory drill to a threaded connector, the drill pipe having a longitudinal axis and an end, the threaded connector member having a first portion mating with the drill pipe and a second portion extending away from the drill pipe, at least one of the connector member and the drill pipe having a plurality of spaced-apart slots adjacent the end of the drill pipe and communicating outwardly at the end, the slots being parallel to the longitudinal axis, the connector being connected to the drill pipe by welding about said end of the drill pipe and along the slots.

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12. The method as claimed in claim 11, wherein the drill pipe is fitted over the first portion of the connector member, the slots are in the drill pipe and the welds are extended through the slots to the connector member.

13. The method as claimed in claim 12, wherein the slots have open ends adjacent to the connector member, the welding being carried out by first welding the open ends of the slots.
- 5        14. The method as claimed in claim 13, wherein the welded open ends of the slots are peened prior to welding the rest of the slots and welding about the end of the drill pipe.
- 10        15. The method as claimed in claim 11, wherein the end of the drill pipe is completely welded to the connector member in a ring.
- 15        16. A method of connecting a drill pipe for a rotary-vibratory drill to a threaded connector, the drill pipe having a longitudinal axis and an end, the threaded connector member having a first portion mating with the drill pipe and a second portion extending away from the drill pipe, at least one of the connector member and the drill pipe having a plurality of spaced-apart slots adjacent the end of the drill pipe and communicating outwardly at the end, the connector being connected to the drill pipe by first welding the slots adjacent to the end of the drill pipe, peening the welds adjacent to the end of the drill pipe and then welding about said end of the drill pipe and along the slots.
- 20        17. The method as claimed in claim 16, wherein the drill pipe is fitted over the first portion of the connector member, the slots are in the drill pipe and the welds are extended through the slots to the connector member.
- 25        18. The method as claimed in claim 16, wherein the end of the drill pipe is completely welded to the connector member in a ring.